Claims

1. Method for equalizing the pressures in the melting chamber and in the cooling water system of a special melting unit, for example a pressure electroslag remelting (PESR) unit having a copper ingot mold, or a pressure induction furnace having an induction coil and a cooling water system, in which the pressure of the cooling water for the ingot mold/induction coil circuit is compared to the pressure of the process gas in the melting chamber of the unit, characterized in that the pressure difference is maintained in a range from 0 to +/- 0.5 bar, whereby the gas from the melting chamber of the unit is first led to an intermediate vessel containing hydraulic liquid, and only then is the hydraulic liquid supplied to one of the two chambers of a piston-type accumulator, whereby, corresponding to a pressure drop or pressure rise in one of the two media, counteraction is provided by discharging excess gas or by additional repumping of cooling water, or vice versa, and the direction of the countereffect for a pressure drop or pressure rise is determined by the magnitude and rate of the pressure drop/pressure rise.

2. Device for equalizing the pressures in the melting chamber and in the cooling water system of a special melting unit, for example a pressure electroslag remelting (PESR) unit having a copper ingot mold, or a pressure induction furnace having an induction coil and a cooling water system, in which a piston-type accumulator which is subdivided by a piston into two variable-volume chambers is provided in the cooling water circuit for the copper ingot mold/induction coil, the one chamber of the piston-type accumulator being connected via a pipe and control fittings to the cooling water circuit for the ingot mold/induction coil, and a heat exchanger, one

or more circulating pumps, and an additional high pressure water refill pump being correspondingly provided in the cooling water circuit, characterized in that the other chamber (18) of the piston-type accumulator (19) is connected via an additional pipe (27) and control fittings (28, 29) to an intermediate vessel (30) which is partially filled with a hydraulic liquid (31), the intermediate vessel (30) being connected via an additional hydraulic line (32) with control and shutoff fittings (33, 34) to the melting chamber (35) of the PESR unit or of the pressure induction furnace, and one or more pressure sensors (36) being respectively mounted in each of the above-referenced pipes, whereby, corresponding to the design pressure of the unit, the piston-type accumulator (19) may be designed as a hydraulic cylinder with a continuous piston rod (37) or as a pneumatic cylinder with a magnetic piston, and the high pressure water refill pump (26) may be designed as a metering pump.

3. Device according to Claim 2, characterized in that the pipe (32) between the vessel (30) and the furnace hood (3) above the liquid-filled chamber of the vessel leads into this vessel, and the piston-type accumulator (19) is situated in a plane below the plane of the vessel (30).

4. Device according to Claims 2 and 3, characterized in that the piston rod (37) of the piston-type accumulator (19) extends through both end walls of the piston-type accumulator, and cooperates with position switches (38) by which the valves (28, 29, 33, 34) in the pipes which are connected to the vessel (30) can be actuated.